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Spraying and Dusting MAJOR FIELD CROPS

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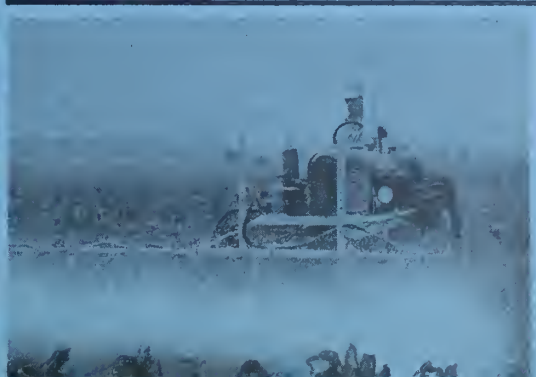

SOURCE OF MATERIAL

This report contains estimates of the 1949 acreage of field corn and small-grain crops harvested that were sprayed or dusted for weed control, as well as the acreage of corn that was sprayed or dusted for insects. Also, it contains estimates of the 1949 acreage of cotton that was dusted or sprayed, the number of times dusted or sprayed and the percentage of the acreage that was mopped one or more times. These estimates are based on information supplied in February 1950 by voluntary crop reporters of the United States Department of Agriculture and on material obtained from both State and Federal weed control specialists and entomologists.

For the small-grain crops, the crop correspondents reported the acreage harvested on their farm in 1949 and the acres which were sprayed or dusted for weed control with (1) airplane equipment and (2) ground equipment. The estimates of this report include acreages of these crops sprayed or dusted that were not harvested because of crop failure or crop destruction.

Information concerning spraying and dusting small-grain crops, including flaxseed, was obtained in 34 States. These States had about 82 percent of the United States acreage of those crops in 1949.

For corn, the crop correspondents reported the acreage harvested on their farms in 1949, the acres sprayed or dusted for weeds, and the acres sprayed or dusted for insects. Thirty-four States that had about 72 percent of the total harvested acreage of field corn in 1949 were included in the survey.

For cotton, the crop correspondents reported the acres harvested on their farms in 1949, the acreage sprayed or dusted, and mopped, and the number of times sprayed or dusted. They reported also the kind of equipment used for dusting and spraying cotton.

Reports on cotton were obtained in 14 States, with about 97 percent of the total harvested acreage in 1949.

The material from crop correspondents relative to cotton were tabulated by five acreage groups within each State. The estimates by acreage groups were weighted by appropriate weights from the 1945 census to derive the State estimates. It is believed that this procedure eliminated a substantial part of the bias resulting because farms included in the survey had above average acreages of cotton per farm. All of the estimates in this report should be considered only as approximations.

SPRAYING AND DUSTING THE MAJOR FIELD CROPS

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Weeds and insects have always been problems with which farmers have had to contend. Insect pests on cotton have been a major problem in some areas for at least a century. Because of the ravages of insects, methods have been developed in most cotton areas for insect control. In recent years, new methods of controlling weeds in small-grain crops and corn and of controlling corn insects have come into use. Production of chemical weed killers has increased tremendously within the last few years, and new kinds of insecticides are now extensively used.

Along with development of the chemical weed killers and new type insecticides there have been new developments in methods of applying them. Production of sprayers adapted for use with field crops has increased greatly. The sprayers are designed for use with tractors, and with airplanes. Some are equipped with mounted motors and can be used with motortrucks and with animal-drawn vehicles. With some new type sprayers an acre can be effectively covered with less than 3 gallons of concentrated spray solution. This is of significance in all areas and especially so in the sub-humid areas where the water supply is often a major problem.

Most of the chemical weed killers used on the corn crop are applied with sprayers, although dusters are widely used for the corn insects. For many years practically all of the cotton insecticides have been applied with dusters but in recent years there has been a marked trend toward sprayers.

Favorable prices of farm crops and high farm incomes have contributed to the increased use of weed killers and insecticides. For example, with wheat at or around present prices an increase in yield of one bushel per acre is sufficient to cover the custom rate for spraying weeds.

SMALL GRAINS

The States included in the survey had about 82 percent of the United States harvested acreage of wheat, oats, barley, rye, buckwheat, and flaxseed, in 1949. According to reports from crop correspondents the acreage of these 6 crops sprayed or dusted for weeds in the States surveyed was about 17 percent of the harvested acreage (table 1). Of the small-grain acreage 30 percent or more was sprayed or dusted for weeds in Montana, Oregon, Washington and Colorado. Use of chemical weed killers was most important in the Plains and in the West. In the Corn Belt States only 5 percent of the small-grain acreage was sprayed or dusted for weeds. Airplane equipment was used for about one-fifth of the dusting and spraying of small grains. This type of equipment was most extensively used in the Central Plains, some Mountain States, and Oregon and Washington. Ground equipment was used for about 78 percent of the spraying and dusting. It was used for 90 percent or more of the acreage in the Lake States, the Northeast States, and in all Corn Belt States except Missouri.

CORN

For the States surveyed the use of chemical weed killers on field corn is less important than for small grains. However, in all States there was some spraying or dusting of corn for weeds. Less than 8 percent of the acreage of corn in the 34 States covered in the survey was dusted or sprayed for weeds in 1949. In most Corn Belt and Northeast States a higher percentage of the corn than of the small-grain acreage was dusted or sprayed for weeds. Application of chemical weed killers to corn was above average in most Corn Belt and Northeast States.

Only about 4 percent of the acreage of corn was dusted or sprayed for insects. Use of insecticides on the corn crop was above average in Iowa, Illinois, and Maryland. Much of the spraying and dusting of corn in the major corn areas is done to control the corn borer. In most of the Northeastern States, more corn is sprayed or dusted for the Japanese beetle than for all other insects. Much of the spraying and dusting of corn for insects is done when the corn is in or approaching the silk and tassel stage. Although definite information is not available it is believed that airplane equipment was used for at least half of the spraying and dusting of corn for insects. Some of the ground equipment used for corn insects is of the high clearance type and can be used with tall plants.

COTTON

According to crop correspondents, more than a third of the 1949 cotton acreage was dusted or sprayed (table 2). For the 14 States included in this survey the acreage dusted or sprayed was covered an average of about three times. Some growers reported dusting their crop 12 times and even oftener. The insect infestation in 1949 was especially severe

Table 1.- Percentage of acreage of small grain and field corn sprayed or dusted and type of equipment used on small grain by States, 1949 crops

State and group	Small grain 1/				Corn		
	Total acres small grain harvested in 1949	Percentage of acres sprayed or dusted for weed control	Percentage sprayed or dusted with - Airplane equipment	Ground equipment	Total acres harvested in 1949	Percentage of acreage sprayed or dusted for - Weed control	Insect control
	1,000 acres	Percent	Percent	Percent	1,000 acres	Percent	Percent
New England	167	10	1	99	169	6	1.0
New York	1,358	6	6	94	705	8	.4
New Jersey	153	7	1	99	181	20	3.0
Pennsylvania	1,979	8	-	100	1,378	20	2.0
Delaware	98	6	-	100	146	14	2.0
Maryland	516	1	-	100	483	1	8.0
Northeast	4,271	6.5	2	98	3,062	13.2	1.9
Ohio	3,729	3	5	95	3,617	12	.2
Indiana	3,272	3	6	94	4,799	13	1.0
Illinois	5,847	5	10	90	9,252	6	7.0
Iowa	6,803	8	9	91	11,471	7	11.0
Missouri	3,781	4	25	75	4,243	13	.5
Corn Belt	23,432	5.1	11	89	33,382	8.9	6.0
Michigan	3,084	3	5	95	1,790	2	2.0
Wisconsin	3,348	8	4	96	2,596	2	3.0
Minnesota	9,115	24	4	96	5,648	3	3.0
Lake States	15,547	16.4	4	96	10,034	2.6	2.8
North Dakota	16,048	18	17	83	1,220	4	1.0
South Dakota	9,081	23	16	84	3,944	7	.7
Nebraska	6,517	13	40	60	7,364	6	.4
Kansas	15,441	18	37	63	2,524	8	1.0
Great Plains	47,087	18.3	25	75	15,052	6.4	.6
West Virginia	154	2	-	100	267	1	2.0
Montana	5,961	48	26	74	185	3/	3/
Idaho	2,076	11	6	94	34	3/	3/
Wyoming	656	13	45	55	62	3/	3/
Colorado	3,946	30	31	69	679	7	1
New Mexico	530	12	17	83	135	3/	3/
Arizona	213	17	8	92	35	3/	3/
Utah and Nevada	671	12	10	90	28	3/	3/
Mountain	14,053	32.3	26	74	1,158	8	3.0
Washington	2,965	30	32	68	17	15	5.0
Oregon	1,717	32	29	71	30	10	5.0
Total 2/	109,226	17.0	22	78	63,002	7.5	3.9

1/ Includes wheat, oats, barley, rye, buckwheat, and flaxseed.
2/ In 1949 the above States harvested about 82 percent of the small grain covered in the survey, and 72 percent of the corn acreage.
3/ Included in State group total.

Table 2.- Cotton dusted, sprayed, and mopped, and kind of equipment used by States, 1949

State and group	Acreage in cultivation July 1, 1949	Percentage of acreage dusted or sprayed	Average times dusted or sprayed	Percentage of dusting or spraying done with - Tractor equipment	Airplane equipment	All other equipment 1/	Percentage of acreage mopped one or more times
	1,000 acres	Percent	Number	Percent	Percent	Percent	Percent
Tennessee	845	2	2.6	57	-	43	2
Virginia	33	19	1.3	7	-	93	-
North Carolina	869	22	2.4	56	11	33	2
Appalachian	1,747	12	2.4	55	10	35	2
South Carolina	1,283	61	3.3	60	2	38	23
Georgia	1,618	74	4.6	64	7	29	12
Florida	51	14	2.0	25	-	75	-
Alabama	1,825	37	3.4	56	5	39	2
Southeast	4,777	56	3.9	61	5	34	11
Mississippi	2,859	46	4.2	31	33	36	1
Louisiana	1,077	34	3.7	20	24	56	3
Arkansas	2,616	16	2.9	62	10	28	1
Delta	6,552	32	3.5	34	28	38	1
Oklahoma	1,344	11	2.4	88	10	2	-
Texas	10,988	27	2.1	78	14	8	1
Okla.-Texas	12,332	25	2.1	78	14	8	1
Arizona	401	90	2.9	15	85	-	-
California	963	85	1.9	17	81	2	-
Arizona and California	1,364	86	2.2	16	83	1	-
All States 2/	26,772	35	2.9	54	20	26	3

1/ Includes chiefly hand dusters and sprayers and equipment designed for use with work animals.

2/ No information on cotton in Missouri and New Mexico. The reporting States had about 97 percent of the cotton acreage in the United States as of July 1, 1949.

Table 3.- Cotton dusted, sprayed, and mopped, and type of equipment used, farms with specified acreages of cotton per farm, by State groups, 1949

State group	Acreage of cotton per farm	Percentage of acreage dusted or sprayed	Average times dusted or sprayed	Percentage of dusting or spraying done with - Tractor equipment	Airplane equipment	All other equipment 1/	Percentage of acreage mopped one or more times
	Acres	Percent	Number	Percent	Percent	Percent	Percent
Appalachian	Under 10	13	2.2	42	9	49	1
	10 - 19	11	2.5	72	14	14	2
	20 - 49	14	2.6	70	5	25	2
	50 & over	15	3.0	72	17	11	-
	Average	12	2.4	55	10	35	2
Southeast	Under 10	45	3.4	48	1	51	12
	10 - 19	50	3.7	59	2	39	14
	20 - 49	60	3.8	69	5	26	13
	50 & over	74	4.8	71	14	15	6
	Average	56	3.9	61	5	34	11
Delta	Under 10	17	3.0	15	5	80	3
	10 - 19	18	2.9	29	5	66	1
	20 - 49	17	3.4	44	7	49	1
	50 & over	58	5.1	40	55	5	1
	Average	32	3.5	34	28	38	1
Okla.-Texas	Under 10	19	2.3	44	8	48	1
	10 - 19	18	2.2	70	5	25	2
	20 - 49	22	2.2	86	6	8	1
	50 & over	27	2.0	77	20	3	1
	Average	25	2.1	78	14	8	1
Arizona and California	Average	86	2.2	16	83	1	--
All groups 2/	Under 10	27	3.3	42	2	56	4
	10 - 19	28	3.3	54	4	42	4
	20 - 49	29	3.1	69	8	23	3
	50 - 99	35	3.4	63	25	12	2
	100 & over	49	4.3	42	55	3	-
	Average	35	2.9	54	20	26	3

1/ Includes chiefly hand dusters and sprayers and equipment designed for use with work animals.

2/ No information on cotton in Missouri and New Mexico. The reporting States had about 97 percent of the United States cotton acreage as of July 1, 1949.

in some areas. Practically all of the dusting and spraying of cotton was done to control insects. Some cotton was dusted or sprayed in each of the 14 reporting States.

Around 85 percent or more of the cotton grown in California and Arizona was dusted or sprayed. In these States, the acreage treated was covered slightly more than two times on the average. In Georgia, 74 percent of the cotton was dusted or sprayed. Here the acreage was covered an average of over 4½ times. Only 2 percent of the acreage in Tennessee was dusted or sprayed.

More than half of the dusting and spraying of cotton was done with tractor equipment. Use of this equipment was above average in Oklahoma, Texas, and the Southeast. Use of airplane equipment was reported in most States and it accounted for about one-fifth of the dusting and spraying of cotton in 1949. It was of above average importance along the West coast and in the Delta States.

"All other equipment", consisting chiefly of animal and hand equipment, accounted for more than one-fourth of the acreage of cotton dusted or sprayed in 1949. More than one-third of the dusting and spraying in the Delta, the Southeast, and the Appalachian States was done with equipment other than airplane and tractor.

The number of acres of cotton grown per farm influenced considerably the extent of dusting and spraying cotton and the kind of equipment used. For the country as a whole a higher percentage of the cotton acreage was dusted or sprayed on farms with large cotton acreages than on farms with small acreages (table 3). Also, on farms with large cotton acreages, use of airplane equipment was relatively much more important than on farms with small acreages.

Mopping cotton is the applying of a poisonous sticky mixture, usually consisting of calcium arsenate, molasses and water, to the cotton plant by hand methods. A short stick, one end of which is covered with cloth, is used for applying the poison. This practice is more common in South Carolina and Georgia than elsewhere. In most areas it was reported more frequently on farms with small acreages of cotton than on farms with large acreages. Only 3 percent of the total cotton acreage was mopped in 1949. In the Southeast, about 11 percent of the acreage was mopped. Mopping cotton, a long-established method of weevil control in many areas, is being rapidly replaced by newer methods.